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PN - JP2003101831 A 20030404  
TI - DEVICE FOR FITTING SOLID STATE IMAGE PICKUP ELEMENT  
FI - G03B17/02 ; H01L27/14&D ; H04N5/225&D ; H04N5/335&V  
PA - YOKOGAWA ELECTRIC CORP  
IN - KAKUTATSU NOBUYUKI  
AP - JP20010286777 20010920  
PR - JP20010286777 20010920  
DT - I

## © WPI / DERWENT

AN - 2003-581092 [55]  
TI - Attachment apparatus of solid-state image pickup used in surveillance camera, involves aligning optical axis of optical system with respect to solid-state image pickup  
AB - JP2003101831 NOVELTY - A solid-state image pickup (1) is inserted into an attaching hole in a printed circuit board (2) by a coiled spring (22). The image pickup mounted in the printed circuit board, is aligned with respect to the optical axis of an optical system.  
- USE - For attaching solid-state image pickup used in surveillance camera.  
- ADVANTAGE - Since solid-state image pickup is inserted into the attaching hole of printed circuit board by the coiled spring, machining operation is easy and manufacturing cost is low.  
- DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of the attachment apparatus of solid-state image pickup. (Drawing includes non-English language text).  
- solid-state image pickup 1  
- printed circuit board 2  
- coiled spring 22  
- (Dwg.1/5)  
IW - ATTACH APPARATUS SOLID STATE IMAGE SURVEILLANCE CAMERA ALIGN OPTIC AXIS OPTICAL SYSTEM RESPECT SOLID STATE IMAGE  
PN - JP2003101831 A 20030404 DW200355 H04N5/225 004pp  
IC - G03B17/02 ; H01L27/14 ; H04N5/225 ; H04N5/335  
MC - U13-A02C V04-Q02 W02-F01A W04-M01B5 W04-M01G1B  
DC - P82 U13 V04 W02 W04  
PA - (YOKG ) YOKOGAWA DENKI KK  
AP - JP20010286777 20010920  
PR - JP20010286777 20010920

## © PAJ / JPO

PN - JP2003101831 A 20030404  
TI - DEVICE FOR FITTING SOLID STATE IMAGE PICKUP ELEMENT  
AB - PROBLEM TO BE SOLVED: To realize a solid state image pickup fitting device capable of making the optical axis of an optical system coincide with the pixel center of a solid state

image pickup element even when adjusting work is not executed at the time of assembling the image pickup element in a housing without generating a deviation between the optical axis of the optical system and the pixel center of the image pickup element even when the position of the image pickup element mounted on a printed board is deviated.

- SOLUTION: The solid state image pickup element fitting device for fitting the solid state image pickup element to the housing by aligning the image pickup element mounted on the printed board to the optical axis of the optical system is provided with a fitting hole formed in the housing so as to be aligned to the optical axis of the optical system and having a shape to be engaged with the image pickup element and a pressing means for pressing the printed board to engage the fitting hole with the image pickup element.

I - H04N5/225 ;G03B17/02 ;H01L27/14 ;H04N5/335

PA - YOKOGAWA ELECTRIC CORP

IN - KAKUTATSU NOBUYUKI

ABD - 20030806

ABV - 200308

AP - JP20010286777 20010920

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the attachment equipment of a solid state image pickup device which carries out alignment of the solid state image pickup device to the optical axis of optical system, and is attached in housing.

[0002]

[Description of the Prior Art] With the surveillance camera, it has attachment equipment of the solid state image pickup device which holds a surface mount type solid state image pickup device in camera housing.

[0003] Drawing 5 is drawing having shown the example of composition of the attachment equipment of the solid state image pickup device in the former. By drawing 5, the solid state image pickup device 1 is mounted in the printed circuit board 2 by soldering. The printed circuit board 2 is attached in housing 4 with the screw thread 3. The attaching hole 6 with which the lens mounting screw 5 was cut is formed in housing 4. The screw thread is turned off also at the lens unit 7 side, and this screw thread is screwed in the lens mounting screw 5. The lens unit 7 is attached in housing 4 by this. The lens unit 7 is the optical system of a camera. Image formation of the picture photographed with the camera (not shown) is carried out by the lens unit 7 on a solid state image pickup device 1.

[0004] However, there was the following trouble in the conventional example of drawing 5.

(a) In case a solid state image pickup device 1 is mounted in a printed circuit board 2, to the printed circuit board 2, the position may have shifted or the solid state image pickup device 1 may lean [ the solid state image pickup device 1 ] to the printed circuit board 2 according to the difference of a solder coverage.

(b) When attaching in housing 4 the printed circuit board 2 in which the solid state image pickup device 1 was mounted, it may \*\*\*\* with the screw-thread attaching hole of a printed circuit board 2, and the optical axis of the lens unit 7 and the center of a solid state image pickup device 1 may not be in agreement with the path clearance of 3.

[0005] These geometric gaps serve as a strain of a picture which is visible to a curve. There were the following cures in making distortion of such a picture into the minimum.

(A) Use the lens unit of the diameter of macrostomia.

(B) Make in agreement the pixel center of the optical axis of a lens unit, and a solid state image pickup device.

However, it is not realistic on the problem of a space and a price to adopt (A). It \*\*\*\*s outputting the picture incorporated by the solid state image pickup device 1 to a monitor, and looking at a picture, in order to realize (B), it is necessary to adjust bolting of 3, and tuning is troublesome.

[0006]

[Problem(s) to be Solved by the Invention] When it is made in order that this invention may solve the trouble mentioned above, the pixel center of the optical axis of optical system and a solid state image pickup device does not shift even if the position which mounts a solid state image pickup device in a printed circuit board shifts, and attaching a solid state image pickup device to housing, even if it does not carry out tuning, it aims at realizing the attachment equipment of the solid state image pickup device which can make in agreement the pixel center of the optical axis of optical system, and a solid state image pickup device.

[0007]

[Means for Solving the Problem] this invention is attachment equipment of a solid state image pickup device which became the composition as follows.

[0008] (1) The attachment equipment of the solid state image pickup device which carries out [ having a forcing means are formed in the aforementioned housing, and carry out alignment, and it is formed to the optical axis of optical system in the attachment equipment of a solid state image pickup device which carries out alignment of the solid state image pickup device mounted in the printed circuit board to the optical axis of optical system, and is attached in housing, force the aforementioned printed circuit board with the attaching hole which made the configuration in which the aforementioned solid state image pickup device is inserted, and insert a solid state image pickup device in the aforementioned attaching hole, and ] as the feature.

[0009] (2) The aforementioned forcing means is attachment equipment of the solid state image pickup device given in (1) characterized by being the coiled spring or flat spring which forces a printed circuit board from the component side of a solid state image pickup device, and the substrate side of an opposite side.

[0010] (3) It is attachment equipment of the solid state image pickup device given in (1) characterized by having constituted the electrode holder in which the aforementioned attaching hole was formed, on the aforementioned housing and another object, having constituted housing from metal material, and constituting the aforementioned electrode holder from resin mold goods.

[0011] (4) Attachment equipment of the solid state image pickup device given in (3) characterized by making into the diameter of the same the attaching hole which attaches the aforementioned optical system in housing, and the attaching hole which attaches the aforementioned electrode holder in housing.

[0012] (5) Attachment equipment of the solid state image pickup device given in (3) characterized by establishing a fixed means to fix the hand-of-cut position of the electrode holder attached in the aforementioned housing.

[0013] (6) The aforementioned forcing means is attachment equipment of the solid state image pickup device given in (1) characterized by forcing the aforementioned printed circuit board and forcing on the base of the aforementioned attaching hole the glass side formed on the surface of the solid state image pickup device.

[0014]

[Embodiments of the Invention] this invention is explained in detail using a drawing below. The block diagram in which drawing 1 shows one example of this invention, and drawing 2 are drawings having shown the example of composition of a solid state image pickup device. (a) of drawing 2 is a plan and (b) is a side elevation. The thing same in these drawings as the above-mentioned drawing attaches the same sign. By drawing 1 and drawing 2, a solid state image pickup device 1 has the pixel side 11 where the solid state image pickup device was arranged in the shape of a matrix. The pixel side 11 top is covered in the layer of glass 12. The attaching hole 20 is formed in housing 21, and to the optical axis of the lens unit 7, alignment of it is carried out and it is formed. The attaching hole 20 is making the package size of a solid state image pickup device 1, and the configuration with a sufficient force fire which inserts each other in and will be in a state.

[0015] The forcing means 21 is coiled spring in the example of drawing. The forcing means 22 forces a printed circuit board 2 by the elastic force, and sticks the glass side 13 of a solid state image pickup device 1 on the base of an attaching hole 20. As for the attaching hole 20, predetermined parallelism is secured to the lens unit clamp face 8. The parallelism of the lens unit 7 and a solid state image pickup device 1 is securable with this. By using the forcing means 22, it has not said that a solid state image pickup device 1 does not stick to an attaching hole 20, and a solid state image pickup device 1 can be certainly attached to an attaching hole 20. To the optical axis of the lens unit 7, alignment of the attaching hole 20 is carried out, and it is formed, and since [ that the package size of a solid state image pickup device 1 and a force fire are good ] it inserts each other in and is in the state, it can make in agreement the pixel center 14 of the optical axis of the lens unit 7, and a solid state image pickup device 10. Position precision sufficient between the lens mounting screw 5 and an attaching hole 20 is secured. Moreover, sufficient parallelism is secured between the glass side 13 of a solid state image pickup device 1, and the pixel side 11.

[0016] Covering 23 is attached in housing 21 with the screw thread 24. The forcing means 22 intervenes between covering 23 and a printed circuit board 2, and has forced the printed circuit board 2 from the component side of a solid state image pickup device 10, and the substrate side of an opposite side.

[0017] Drawing 3 is the block diagram having shown other examples of this invention. In the example of drawing 3, the forcing means 22 is flat spring.

[0018] Drawing 4 is the block diagram having shown other examples of this invention. The housing 25 which attaches the lens unit 7, and the electrode holder 26 which attaches a solid state image pickup device 1 consisted of examples of drawing 4 on another object. Since high intensity is required of the housing 25 which attaches the lens unit 7, it consists of metal material. Components are metals and nonferrous metals, such as an aluminium alloy. The electrode holder 26 which attaches a solid state image pickup device 1 consists of resin mold goods. If the outer-diameter size  $d$  of the electrode holder 26 made of a resin is made equal to the diameter of a prepared hole of the lens mounting screw 5, it becomes easy to carry out machining and a manufacturing cost can be reduced. The fixed means 27 fixes the position of the hand of cut of the electrode holder 26 attached in housing 25. The fixed means 27 is a pin in the example of drawing. By this, a rotation gap of a solid state image pickup device 1 is prevented. In addition, a screw thread is sufficient as the fixed means 27.

[0019]

[Effect of the Invention] According to this invention, the following effect is acquired.

[0020] In invention according to claim 1, alignment was carried out to the optical axis of optical system, the attaching hole was formed, and it has positioned by inserting a solid state image pickup device in this attaching hole. Even if the position which mounts a solid state image pickup device in a printed circuit board has shifted by this, or a solid state image pickup device inclines to a printed circuit board according to the difference of a solder coverage and it is attached, the pixel center of the optical axis of optical system and a solid state image pickup device does not shift. Moreover, even if it does not carry out tuning when attaching a solid state image pickup device to housing since it did not attach to housing on the basis of a printed circuit board like the conventional example but has attached on the basis of the package of a solid state image pickup device, the pixel center of the optical axis of optical system and a solid state image pickup device can be made in agreement.

[0021] By invention according to claim 2, since the printed circuit board is forced by coiled spring or flat spring from the component side of a solid state image pickup device, and the substrate side of an opposite side, a solid state image pickup device can be stuck to an attaching hole with easy composition.

[0022] Since housing furnished with optical system is constituted from metal material and resin mold goods constitute the electrode holder which attaches a solid state image pickup device from invention according to claim 3, -izing of the equipment can be carried out [ lightweight ] in a required portion, maintaining intensity.

[0023] In invention according to claim 4, the attaching hole which attaches optical system in housing, and the attaching hole which attaches a electrode holder in housing are written in the diameter of the same, it becomes easy to carry out machining, and a manufacturing cost can be reduced.

[0024] In invention according to claim 5, since a fixed means to fix the hand-of-cut position of the electrode holder

attached in housing was established, a rotation gap of a solid state image pickup device can be prevented.

[0025] In invention according to claim 6, since a forcing means forces a printed circuit board and forces on the base of an attaching hole the glass side formed on the surface of the solid state image pickup device, it can secure the parallelism of optical system and a solid state image pickup device.

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[Translation done.]

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**CLAIMS**

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**[Claim(s)]**

[Claim 1] Attachment equipment of a solid state image pickup device which is characterized by providing the following and which carries out alignment of the solid state image pickup device mounted in the printed circuit board to the optical axis of optical system, and is attached in housing The attaching hole which made the configuration in which it is formed in the aforementioned housing, and alignment is carried out, it is formed in to the optical axis of optical system, and the aforementioned solid state image pickup device is inserted A forcing means to force the aforementioned printed circuit board and to insert a solid state image pickup device in the aforementioned attaching hole

[Claim 2] The aforementioned forcing means is attachment equipment of the solid state image pickup device according to claim 1 characterized by being the coiled spring or flat spring which forces a printed circuit board from the component side of a solid state image pickup device, and the substrate side of an opposite side.

[Claim 3] It is attachment equipment of the solid state image pickup device according to claim 1 characterized by having constituted the electrode holder in which the aforementioned attaching hole was formed, on the aforementioned housing and another object, having constituted housing from metal material, and constituting the aforementioned electrode holder from resin mold goods.

[Claim 4] Attachment equipment of the solid state image pickup device according to claim 3 characterized by making into the diameter of the same the attaching hole which attaches the aforementioned optical system in housing, and the attaching hole which attaches the aforementioned electrode holder in housing.

[Claim 5] Attachment equipment of the solid state image pickup device according to claim 3 characterized by establishing a fixed means to fix the hand-of-cut position of the electrode holder attached in the aforementioned housing.

[Claim 6] The aforementioned forcing means is attachment equipment of the solid state image pickup device according to claim 1 characterized by forcing the aforementioned printed circuit board and forcing on the base of the aforementioned attaching hole the glass side formed on the surface of the solid state image pickup device.

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[Translation done.]

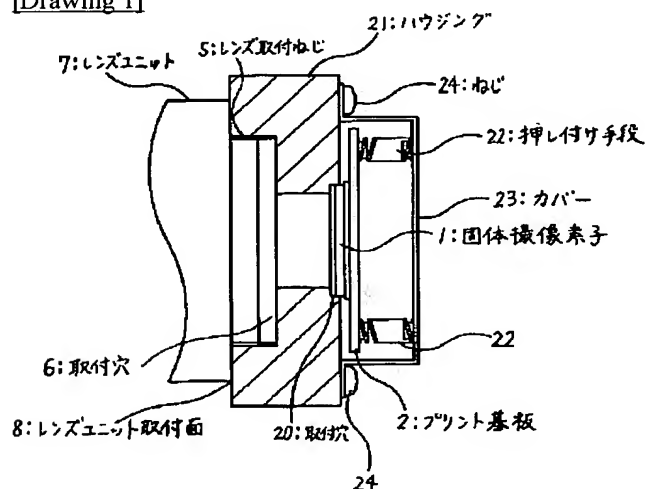
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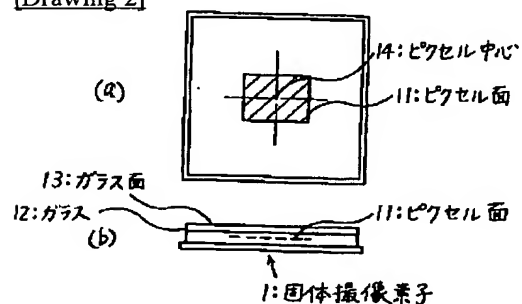
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## DRAWINGS

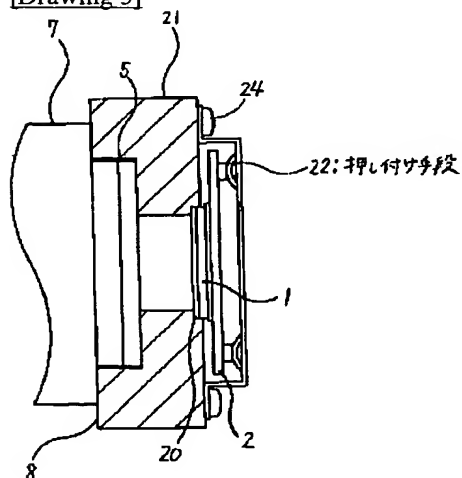
[Drawing 1]



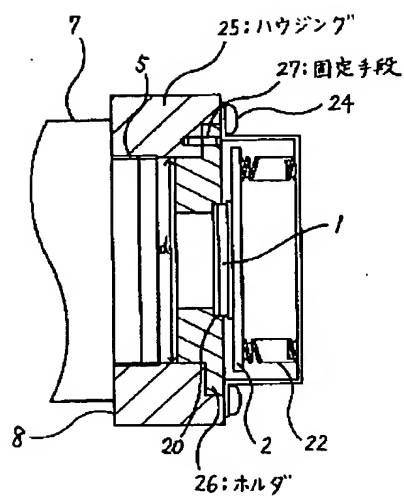
[Drawing 2]



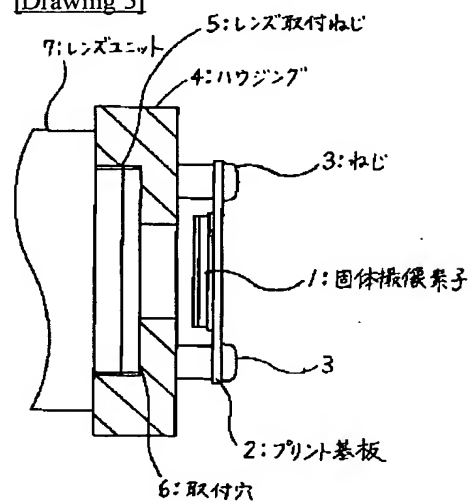
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]